

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

ENVIRONMENTAL ASSESSMENT FOR DOE PERMISSION FOR OFF-LOADING ACTIVITIES TO SUPPORT THE MOVEMENT OF MILLSTONE UNIT 2 STEAM GENERATOR SUB-ASSEMBLIES ACROSS THE SAVANNAH RIVER SITE

OCTOBER 1992

U. S. DEPARTMENT OF ENERGY
SAVANNAH RIVER FIELD OFFICE
AIKEN, SOUTH CAROLINA

MASTER

cto
DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

TABLE OF CONTENTS

1.0	NEED FOR ACTION	Page 1
2.0	PROPOSED ACTION AND ALTERNATIVES	1
2.1	Proposed Federal Action	1
2.2	Alternatives to the Proposed Federal Action	2
	2.2.1 <i>Use of Other Docking Facilities</i>	2
	2.2.2 <i>Overland Rail Movement</i>	2
	2.2.3 <i>Overland Road Movement</i>	2
3.0	ENVIRONMENTAL CONSEQUENCES	4
4.0	SAFETY IMPACTS	5
4.1	Conventional Safety	5
4.2	Nuclear Safety	6
5.0	REFERENCES	8

APPENDIXES:

APPENDIX A: Floodplain/Wetland Assessment

APPENDIX B: NRC Certification and Safety Evaluation Report

APPENDIX C: U. S. Army Corps of Engineers Nationwide Permit

1.0 NEED FOR ACTION

Chem-Nuclear Systems Incorporated (CNSI) maintains and operates the low level radioactive waste burial facility adjacent to the Savannah River Site (SRS) in Barnwell County, South Carolina. As the operating contractor at the Barnwell Facility, CNSI has accepted two oversize/overweight steam generator sub-assemblies (SGSAs) from the Millstone Unit 2 nuclear power reactor in Waterford, Connecticut for disposal. The two SGSAs, which are low level radioactively contaminated waste, are being replaced, retired from service, and shipped to the CNSI facility by CNSI.

This Environmental Assessment (EA) assesses the potential environmental and safety effects of the U.S. Department of Energy permitting CNSI to use Federal property (SRS), as they have requested, for off-loading activities for the two decommissioned SGSAs on their way to the CNSI facility. The SGSA transport barge would make landing at the existing SRS boat ramp, the ramp would be modified as needed for its off-loading, and then the SGSAs would be off-loaded and shipped to the CNSI facility.

Federal permission to use the SRS boat ramp is necessary to enable CNSI to ship the two SGSAs via waterborne traffic, the safest and most economical means of movement for these huge packages. Once off-loaded, the SGSAs would be shipped overland using CNSI equipment to their final destination in Barnwell County. The proposed action has no connection to SRS operations and is in no way necessary to support SRS activities.

2.0 PROPOSED ACTION AND ALTERNATIVES

As approved by the Nuclear Regulatory Commission (NRC), the decommissioned SGSAs would be prepared for shipment in Connecticut by welding on a cover (top hat) to replace the water/steam separator domes, welding caps on all nozzles, and seal-welding all mechanical closures to form a sealed containment vessel. The internal voids would be filled with low density concrete on both the primary and the secondary sides. The concrete would encapsulate any residual liquid in the sub-assembly tubes. The concrete mixture to be used has a density of approximately 21 lbs/cubic foot. The total volume of the primary and secondary sides of the SGSA is approximately 4,150 cubic feet, thus the concrete would weigh approximately 87,000 lbs.

The application by Northeast Nuclear Energy Company to the NRC was approved June 3, 1992 and constitutes authority to use the package for shipment of radioactive material and for the package to be shipped in accordance with the provisions of 49 CFR 173.471 (NRC, 1992). Each generator package would measure 41'-11 1/2" long and 16'-8 3/7" wide. They would be loaded onto a specially designed trailer to be moved by large tow tractors. The truck-trailer combination would be 116 feet long, 18 feet wide, 20 feet high, and weigh 1,150,350 pounds. It would be loaded on a sea-going barge in Connecticut for its shipment and driven off of the barge upon its landing at the SRS boat ramp.

2.1 Proposed Federal Action

The proposed Federal action is to permit CNSI to use Federal property for its SGSA transport barge to make landing at the existing SRS boat ramp, modify the ramp as needed for its off-loading, and off-load the SGSAs for their movement to the CNSI facility in Barnwell County. The existing SRS boat ramp was built in the 1950s. The CNSI modification activities at the SRS boat ramp are expected to be minimal in nature and have been reviewed and accepted by the U.S. Army Corps of Engineers (COE) as an action which is authorized under Nationwide Permit #3 (COE, 1992). More details are provided in Section 3.

According to CNSI plans, the two SGSAs would be packaged and shipped separately, using the same 200 x 40-foot barge and the same 116-foot long truck-trailer combination, both of which are designed to accommodate oversize/overweight loads. The first shipment is proposed to begin in mid-October, and the second shipment is proposed to begin the end of November.

As specified by contract, all expenses associated with the proposed SGSA off-loading activities would be covered by CNSI. This includes all work at the SRS boat ramp, security, sediment sampling and disposal as necessary, mitigation actions required to return the ramp area to its former condition including erosion stabilization, movement of traffic signals and power lines, and any damages which could occur as a result of this movement, or the scheduling of this movement across SRS. CNSI would be liable for any accidents which could occur on SRS and all clean-up/repair activities which could result from such an accident.

SRS occupies about 199,000 acres in southwestern South Carolina located 17 miles southeast of Augusta, GA (see Figure 1). The Savannah River boat ramp is located just north of the TNX Area on SRS and is surrounded by wooded areas. The TNX Area is an expanded testing area for the Savannah River Technology Center and contains simulated models and mock ups for SRS development activities. The SRS site contains national defense facilities including five nuclear production reactor areas; two chemical separations areas; waste processing, storage, and disposal facilities; and various supporting facilities.

2.2 Alternatives to the Proposed Federal Action

The request by CNSI presents DOE with a decision involving two DOE alternatives; 1) permit the off-loading activities (the proposed Federal action), or 2) refuse DOE permission (no action). Alternatives available to CNSI should DOE choose the no action alternative are discussed below.

2.2.1 *Use of Other Docking Facilities*

There is no other dock on the upper Savannah River on the South Carolina side which will accommodate oversize/overweight loads of this magnitude. The Georgia side facilities can not be used because the Savannah River bridges cannot handle the weight. Therefore, other means of barge transport are not a reasonable alternative.

2.2.2 *Overland Rail Movement*

An alternative to the proposed action would be overland rail movement of the SGSAs from Charleston, South Carolina. The barges would be required to make landing at Charleston, SC as no bridges currently spanning the Savannah River are capable of supporting the weight of the SGSA, trailer and tow tractors (combined weight of 1,150,350 pounds). Once off-loaded in Charleston the SGSAs would be loaded onto a CSX rail car and moved to the SRS railyard, now the closest point to CNSI by rail. Upon arriving at the SRS railyard, the SGSAs would be off-loaded onto trailers and towed the remaining distance to the CNSI Facility. This alternative would require crossing numerous South Carolina railroad bridges in order to traverse the approximate 150 miles from Charleston to Barnwell.

This is not a reasonable alternative because many of the railroad bridges existing between Charleston and SRS have been found to be incapable of sustaining the weight of the SGSAs. In addition, this means of movement would also represent an increased risk of accident. The chance of an accidental derailment is far greater than the possibility of a mishap by waterborne traffic.

2.2.3 *Overland Road Movement*

Another alternative to the proposed Federal action would be the movement of the SGSAs from Charleston, South Carolina to Barnwell, South Carolina via overland highways. This is not considered as an acceptable alternative because of key highway bridges enroute that cannot handle the 1,150,350 pounds of weight and the many underpasses enroute that are lower than 20 feet (most interstate highway underpasses are designed for 14-foot clearance). Numerous low hanging power lines, phone lines, and traffic signals would make

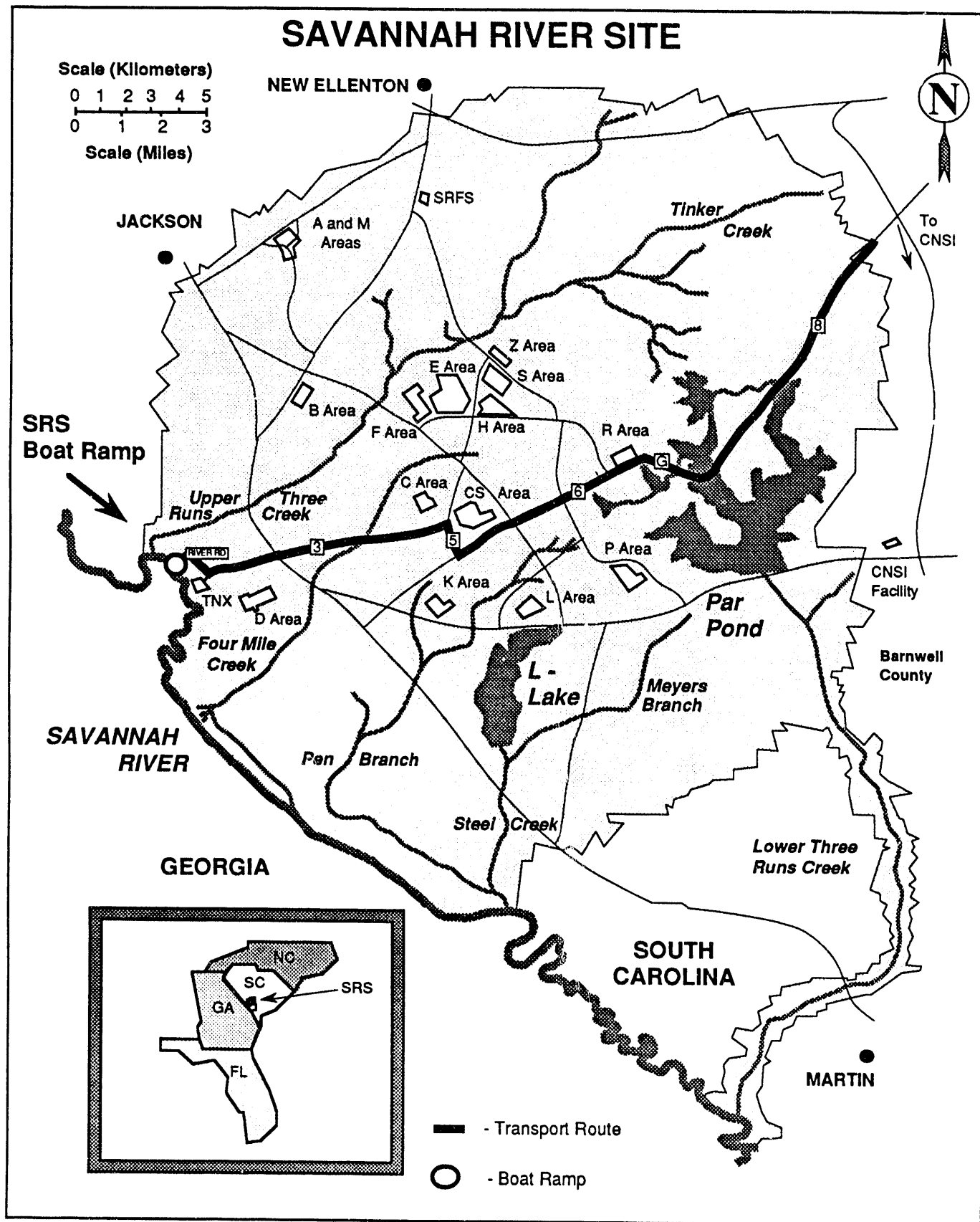


FIGURE 1. Location of SRS Boat Ramp and Transport Route

this mode of movement economically unfeasible. In addition to the physical obstacles which would have to be overcome, the movement would cause severe traffic obstacles at every point along its route.

In addition to the difficulties described above, this means of movement would also represent an increased risk of accident. The chance of a vehicular accident is far greater than the possibility of a mishap by rail or waterborne traffic. Accordingly, this alternative is not considered reasonable.

3.0 ENVIRONMENTAL CONSEQUENCES

The proposed off-loading activities that would take place on Federal land would be located at the SRS boat ramp on the Savannah River just upstream of SRS's TNX Area at river mile marker #157. A recent Floodplain/Wetlands Assessment (see Appendix A) was conducted for the area surrounding the SRS boat ramp. This survey showed that the wetlands within the immediate area would not be affected by the off-loading activities, providing that appropriate erosion control measures were implemented (Rogers, 1992).

The proposed actions would modify the existing 15-foot wide ramp to accommodate the 40-foot wide transport barge. The SRS boat ramp is shown in Figure 1. The CNSI modification activities at the SRS boat ramp are expected to be minimal in nature and have been reviewed and accepted by the U.S. Army Corps of Engineers (COE) as an action which is authorized under Nationwide Permit #3 (COE, 1992; Appendix C). The modification activities would include dredging below the water line of the Savannah River on either side of the boat ramp skid plate; removal and trimming of overhanging flora on either side of the boat ramp; and the grading and clearing of the top of the boat ramp to lower the ramp's angle of descent. During the time frame between the two proposed SGSA trips, the area around the SRS boat ramp would be protected from the effects of erosion by the use of erosion mats.

In addition to the modification and environmental mitigation activities listed above, CNSI would also be responsible for returning the boat ramp above the ordinary high water mark to its preexisting condition. This would be accomplished by; re-paving the boat ramp with "crusher run" gravel; initiating continuing erosion prevention and control activities; and re-seeding the area surrounding the boat ramp. Also, during off-loading, additional environmental precautions would be taken, including the placement of a containment boom around the barge.

CNSI estimates approximately 17 cubic yards of sediment would be dredged from the area 20 feet on either side of the center line of the SRS boat ramp. This figure may vary once actual dredging has begun, as it is strongly tied to the level of the river at the time of construction. In order to maintain compliance with the COE nationwide permit, CNSI has stated that in no case would more than 25 cubic yards of material be removed from below the Savannah River ordinary high water mark. CNSI would dispose of all sediments and debris, after monitoring and sampling for contamination as necessary, on SRS in an SRS erosion control pit.

In addition to the dredging actions described above, it would be necessary to grade, scrape and reshape the top of the boat ramp (approximately 75 feet above the Savannah River waterline). This action would require the removal of the existing asphalt pavement and grading the top of hill to lower the overall angle of descent on the boat ramp. This surface grading is necessary to facilitate the off-loading of the SGSAs. Once the area in question had been graded to an appropriate level, it would then be re-paved with "crusher run" gravel to accommodate vehicular traffic, and all surrounding areas would be re-seeded and appropriate measures would be implemented to prevent erosion and sediment run-off. CNSI would dispose of all soil and debris from this area, after any monitoring and sampling for contamination, on SRS in an SRS erosion control pit.

The only other action associated with the boat ramp would be the clearing of overhanging trees on either side of the boat ramp. The trees in question would be cut down and/or trimmed to allow the CNSI off-loading crane access to the boat ramp. This action would be undertaken in such a manner as to ensure that the existing root system remained in place whenever possible. Once the off-loading of the SGSAs was completed, the area would be re-seeded and erosion control measures would be undertaken until such time

as the banks of the boat ramp could be reestablished with floral growth. The timber to be cut in conjunction with this action is considered as "scrub" timber and is therefore not considered as marketable. There are no threatened or endangered species associated with this clearing activity.

This Federal action would not threaten a violation of applicable laws or regulations; nor require major expansion or construction of waste facilities such as storage, treatment, or disposal facilities; nor release hazardous substances, pollutants, or contaminants into the environment. This action would take place at an area on the Savannah River previously developed in the 1950s and would not adversely affect environmentally sensitive resources such as historical or archaeological sites, endangered species or their habitat. In addition, an existing programmatic memorandum of agreement with the South Carolina State Historic Preservation Officer describes how SRS cultural resources are to be managed and assessed to determine National Register eligibility. Activities related to this Federal action comply with this agreement.

One potential impact associated with the proposed action would be the possible erosion which could occur as a result of the clearing activities around the ramp. Accordingly, CNSI would abide by the Aiken County Erosion Control Ordinance and develop an approved Erosion Control Plan prior to construction activities beginning on the boat ramp. These plans typically call for the use of siltation fences, erosion control tarpaulins, and re-seeding to mitigate and control any erosion or sediment run-off. The cumulative effects of these activities have been reviewed and it was determined that they would have no major impact on the surrounding environment (USN, 1984 & Rogers, 1992).

The construction and operation of a barge landing slip (an action similar to the one proposed in this EA, but on a larger scale) was previously assessed for the SRS boat landing, which includes the boat ramp, in the Environmental Impact Statement for the **Disposal of Decommissioned, Defueled Naval Submarine Reactor Plants** (USN, 1984). This EIS examined potential sites for the disposal of decommissioned, defueled naval submarine reactor plants. In doing this, it examined SRS and the area surrounding the SRS boat landing and ramp for impact on threatened and endangered species, wetlands, and other environmentally sensitive resources and found that such actions as are discussed in this EA would have "Temporary and minor environmental impacts.....". There has been no discernible change in the area surrounding the SRS boat ramp since the preparation of the EIS cited above.

The **Final Environmental Impact Statement for the Continued Operation of K-, L-, and P-Reactors**, ROEIS, (DOE, 1990), the **Reactor Operation Environmental Information Documents**, Volumes I-III (WSRC, 1989a, 1989b, & 1989c), and the most recent socioeconomic survey of the six-county SRS area of influence (NUS, 1990) contain additional information on SRS areas and facilities, and the areas surrounding SRS. There has been no discernible change to the SRS since the preparation of the ROEIS.

4.0 SAFETY IMPACTS

The safety review for the SGSA shipping packages could be broken down into two parts. The first part would deal with conventional accidents arising from the off-loading activities to support the movement of the SGSAs, and the second with the nuclear safety issues associated with the off-loading activities to support the movement of these contaminated generator sub-assemblies.

4.1 Conventional Safety

Both of the safety issues discussed above have been reviewed by CNSI in the **Safety Analysis Report (SAR) for Transport of Millstone Unit 2 Steam Generator Sub-Assemblies** (See Appendix B), and by the NRC in the **Safety Evaluation Report (SER) for Millstone Unit 2 Steam Generator Subassembly Package**, Certificate of Compliance No. 9244, Rev. 0. A synopsis of the findings from this SAR and the SER are listed below.

The conventional safety concerns associated with this SGSA movement would revolve primarily around the off-loading of the SGSA from the transport barge. The SGSA, trailer, and tow tractors weight of 1,150,350 pounds increases the potential for an accident. However, the shipping contractor Lockwood Marine, Inc. is one of the nation's leading experts in the movement of oversized/overweight materials. The potential for an accident during the off-loading of the barge is minimal and all environmental and safety risks have been determined to be minimal in nature.

Once the SGSA was off-loaded it would be driven across the SRS to its final destination at the CNSI facility in Barnwell County. The affected section of each SRS road would be closed as required by the load position or as required to perform work to span the two bridges along the proposed route. SRS Road 3 would be closed for 6 hours and SRS Road 5 (Road 3 to Road 6) would be closed for 30 minutes. SRS Road 6 would be closed in sections: Road 5 to Road C for 45 minutes, Road C to Road F for 1 hour, and Road F to Road 7 for 45 minutes. Road 8 from Road 7 to the SRS boundary Williston Barricade would be closed for 6 hours on the second day of the move. Traffic signals at the barricades on SRS Road 3 near SC Highway 125 would be affected. The WSRC Electrical & Instrumentation crews would be responsible for raising these lines. The SRS Power Department has also been notified about the pending move and would be in contact with South Carolina Electric & Gas (SCE&G) concerning their transmission line across SRS Road 6. SCE&G would be responsible for raising these lines as the load approaches and lowering them after it passes.

In addition to the boat ramp modification, two SRS bridges, 603-8G and 603-43G, would also be modified during each movement to meet the 116 ft long, 18 ft wide, 20 ft high and 1,150,350 pounds truck-trailer combination capacity. All bridge modification would be done above the bridge, therefore, there would be no wetlands impacted during this modification. The actual load of the vehicle would never be placed on SRS bridges. As the load approaches the bridge, the contractor would construct the span using I-beams. After the load passes the bridge, the span would be removed and repair of any damage to the asphalt pavement would be corrected.

No damages are expected to occur to SRS bridges as a result of the movement of the SGSA. The transport trailers which would be used in conjunction with this movement are specially designed and constructed so that the weight of the SGSA is evenly distributed to the 168 wheels of the trailer and tow tractor. This load distribution should prohibit any damage. In the event that some damage does occur, CNSI has agreed to repair any damages. CNSI would coordinate with Wackenhut Securities, Inc.(WSI), the DOE contractor at SRS for security support services, for security and traffic control of the SGSAs while they are on Federal property. Close planning and coordination, including the movement of traffic signals and power would minimize any traffic effects as a result of the SGSA movement, thereby further minimizing traffic risks.

4.2 Nuclear Safety

In 1989, the Northeast Nuclear Energy Company performed a series of radiation dose rate measurements on contact with the top of the steam generator tube bundle. The dose rates at this location ranged from 7 to 15 R/hr. Contamination surveys were also taken inside the channel head. Each of the Sub-Assemblies is reported to contain approximately 1,403 curies of radioactivity. The major radioisotopes are Cobalt-60/58, Iron-55, and Nickel-63. The radioactivity is contained in a corrosion layer on the inside surfaces (primary side) of the tubes and channel head, and would be further contained by the injection of the concrete mentioned above. Trace amounts of fissile materials may be present. The Certificate of Compliance limits fissile materials to the exempt quantity defined in 10 CFR §71.53. Therefore criticality is not a concern.

The application by Northeast Nuclear Energy Company to the Nuclear Regulatory Commission was approved June 3, 1992 and constitutes authority to use the package for shipment of radioactive material and for the package to be shipped in accordance with the provisions of 49 CFR 173.471.

The Northeast Nuclear Energy Company and the NRC performed independent analysis, using MICROSHIELD, to calculate the external dose rate from the SGSA. Table 1 summarizes these results.

Table 1**Summary of External Dose Rates**

SGSA Location	NNEC (mrem/hr)	NRC (mrem/hr)	Allowable (mrem/hr)
Package Surface			
Side	64.1	66.7	200
Top	94.2	114.6	200
Bottom	4.0	----	200
2 Meters from Surface *			
Side	31.1	31.6	10
Top	11.4	10.7	10
Bottom	0.3	----	10
2 Meters from Barge			
Side	11.5	11.5	10
Top	1.8	----	10
Bottom	0.04	----	10

* 2 meters from package surface for side dose rates, 2 meters from edge of trailer for top and bottom dose rates.

In order for the SGSAs surface dose rates to be in compliance with 10 CFR §71.47, CNSI would be required to weld on additional shielding to the surface of the package. In addition to the shielding, CNSI would undertake the following additional safety precautions prior to shipment of the SGSAs from Millstone;

- A CNSI Health Physic technician would accompany the SGSA movements.
- Radiation measurements would be taken to ensure that the radioactivity is not significantly different from the estimates on the NRC application and that the contents meet the concentration limits for low specific activity material.
- Visual inspection of all closure plates and welds.
- External radiation measurements which show that the package meets the standards of 10 CFR §71.47.
- Contamination surveys which show that the package meets the standards in 10 CFR §71.87.

The contents being moved qualify as Low Specific Activity, therefore, the package has been evaluated for the Normal Conditions of Transport as defined in 10 CFR Part 71. The specific section of 10 CFR Part 71 are 10 CFR Part 71.40(b), (c), and (d). The application by Northeast Nuclear Energy Company to the Nuclear Regulatory Commission was approved June 3, 1992 (NRC, 1992). Authorization has been requested and received from NRC to ship the two packages, each for a one-time, single-trip shipment between the Millstone site in Waterford, and the disposal facility near Barnwell.

The preparation of the Millstone Unit 2 SGSAs, as described above, would result in a radiologically sound package which meets the requirements for a structurally sound Type A packaging for shipment of radioactive material. The package is expected to retain the containment integrity of its radioactive contents when subjected to the Normal Conditions of Transport as defined in 10 CFR 71.

5.0 REFERENCES

- COE (U.S. Army Corps of Engineers), 1992. Letter dated August 13, 1992. **Nationwide Permit #3. Repair, Rehabilitate or Replace a Currently Serviceable Boat Ramp**, Charleston District, Charleston, South Carolina
- CNSI (Chem-Nuclear Systems Incorporated), 1991. Report dated December 1991. **Safety Analysis Report for Transport of Millstone Unit 2 Steam Generator Sub-Assemblies**, CNSI, Columbia, South Carolina
- DOE (U. S. Department of Energy), 1990. **Final Environmental Impact Statement, Continued Operation of K-, L-, and P-Reactors, Savannah River Site**, DOE/EIS-0147, Savannah River Operations Office, Aiken, South Carolina.
- DOE (U. S. Department of Energy), 1991. **Intent to Prepare Programmatic Environmental Impact Statement for Reconfiguration of the Nuclear Weapons Complex**, Federal Register 56 FR 5590-5596
- NRC (U. S. Nuclear Regulatory Commission), 1992. **Certificate of Compliance No. 9244 for Radioactive Materials Packages (Model No. Millstone Unit 2 Steam Generator Subassembly package) and Safety Evaluation Report**. Dated June 3, 1992. Nuclear Regulatory Commission, Washington D.C.
- NUS (NUS Corporation), 1990. **Socioeconomic Characteristics of Selected Counties and Communities Adjacent to the Savannah River Site**, NUS Report No. 5234, Savannah River Center, Aiken, South Carolina.
- Rogers, V., 1992 Memorandum to P. Harmon, September 18, 1992. **Evaluation of Wetland Near SRS Boat Ramp**, SRT-ESS-92-0529, Westinghouse Savannah River Company, Aiken, South Carolina.
- USN (U.S. Department of the Navy), 1984. **Final Environmental Impact Statement, Disposal of Decommissioned, Defueled Naval Submarine Reactor Plants**, United States Department of the Navy, Washington, D.C.
- WSRC (Westinghouse Savannah River Company), 1989a. **Reactor Operation Environmental Information Document, Volume I: Geology, Seismology and Subsurface Hydrology (U)**, WSRC-89-815 Savannah River Site, Aiken, South Carolina.
- WSRC (Westinghouse Savannah River Company), 1989b. **Reactor Operation Environmental Information Document, Volume II: Ecology (U)**, WSRC-89-816 Savannah River Site, Aiken, South Carolina.
- WSRC (Westinghouse Savannah River Company), 1989c. **Reactor Operation Environmental Information Document, Volume III: Meteorology, Surface Hydrology, Transport and Impacts (U)**, WSRC-89-817, Savannah River Site, Aiken, South Carolina.

APPENDIX A: Floodplain/Wetlands Assessment

**Floodplain/Wetlands Assessment
for
DOE Permission for Off-Loading Activities to Support the Movement of Millstone
Unit 2 Steam Generator Sub-Assemblies Across the Savannah River Site (SRS)**

1.0 DESCRIPTION OF PROJECT

This Floodplain/Wetlands Assessment is designed and intended to function as an Appendix to the **Environmental Assessment for DOE Permission for Off-Loading Activities to Support the Movement of Millstone Unit II Steam Generator Sub-Assemblies Across the Savannah River Site (DOE/EA-0818)**. As such a detailed description of the proposed action may be found in that document.

2.0 EFFECT ON FLOODPLAINS OR WETLANDS

2.1 Floodplain Assessment

The proposed site to be reviewed under this Floodplain/Wetlands Assessment is in a well drained floodplain of the Savannah River. The site is currently serving in the capacity of an established and operating boat ramp on the South Carolina side of the Savannah River. The proposed site which is subject to this assessment is a government owned and operated plot of land on the Savannah River Site (SRS). Accordingly modification of this site, as described in the EA, represents no potential effect on the lives or property of the local populace.

Modification of the SRS boat ramp will result in the loss of a few bottom land hardwood trees. This is considered as an acceptable loss as the species involved with this clearing activity are considered as "scrub" timber with no commercial value. There are no threatened or endangered species involved with this activity. The overall benefit of this activity will be to improve the quality, accessibility and safety of the existing boat ramp. By re-planting and re-seeding the area with desired replacement species, the esthetic value and long term viability of the site will actually be improved.

A potential negative aspect of the proposed action is the possibility of erosion from excessive rains or high river flow during the proposed activity. This potential risk may be reduced by installing pilings at the water line of the boat ramp where the cutting edge of the Savannah River bends inward towards the ramp. The soil material at the subject location is classified as Udorthents, which was formed during construction of the Ellenton Dock and the present boat ramp from Shellbluff and Tawcaw soil series. These soils are typically developed in the well drained floodplains of this region. These soils are normally deposited by streams, and are therefore very erosive in nature. Special precautions are needed during the disturbance of the vegetative cover in this area. Some of the erosive potential may be reduced by diverting run-off water away from the newly constructed area, by using mulch and matting, and by re-seeding immediately after completion of the grading.

2.2 Wetlands Assessment

There would be no impact on the surrounding wetlands as a result of the proposed action. There are no wetlands adjacent to the road leading out of the river (boat ramp), therefore

no direct impact to wetlands should occur. There are wetlands about 400 feet north-east of the rivers edge (and the proposed action). To protect this area, a ridge (a compressed soil berm) should be left between the proposed activity and the wetlands after the grading is completed. This will prevent the creation of a new outfall which may inadvertently drain the wetlands. This soil ridge would also serve to reduce the erosion potential associated with this activity.

2.3 Positive and Negative Effects

The only foreseeable negative impact associated with this project is short term in nature. The possibility of sediment run-off, or erosion, which could occur as the result of a storm during the construction period, has the potential to result in a temporary localized reduction in the water quality of the Savannah River. This erosion could also inflict some minor damage to the soils along the bank in the proposed area.

The overall result of the proposed activity would be beneficial in nature. The project would provide the SRS with an improved landing facility which could accommodate broader spectrum of waterborne equipment. This project also has the potential to improve the overall beauty and long term viability of the area through selective re-seeding with more desirable species.

3.0 ALTERNATIVES CONSIDERED

Alternatives to the proposed action and mitigating measures to prevent damage to the proposed site are covered in **Environmental Assessment for DOE Permission for Off-Loading Activities to Support the Movement of Millstone Unit II Steam Generator Sub-Assemblies Across the Savannah River Site.**

APPENDIX B: NRC Certification and Safety Evaluation Report



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

SAFETY EVALUATION REPORT
Millstone Unit 2 Steam Generator Subassembly Package
Certificate of Compliance No. 9244
Revision No. 0

SUMMARY

By application dated December 23, 1991, as supplemented, Northeast Utilities requested approval of the Millstone Unit 2 Steam Generator Subassembly as a transportation package for greater than a Type A quantity of low specific activity radioactive material. Based upon the statements and representations contained in the application and the conditions listed below, we have concluded that the Millstone Unit 2 Steam Generator Subassembly package meets the requirements of 10 CFR Part 71.

REFERENCES

Northeast Utilities application dated December 23, 1991.

Supplements dated: April 30, and May 18 and 27, 1992.

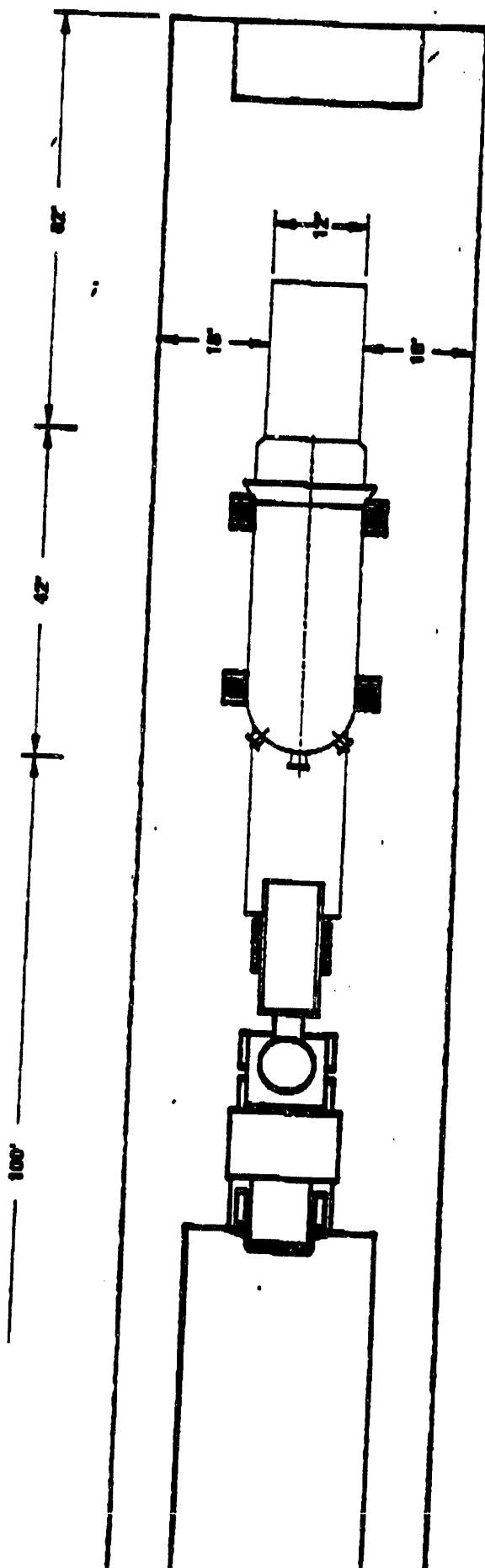
DESCRIPTION

A steam generator subassembly filled with low density concrete. The steam generator subassembly consists of the steam generator shell, tube bundle, and primary channel head. The steam generator subassembly is essentially cylindrical with an OD of 13' 9" along the tube bundle region and a maximum OD of 16' 8-3/4" at the transition region. The vessel walls are constructed of A516 and A533 carbon steel. The wall thickness varies from 4-3/8" in the side wall, and 5-5/8" in the transition region, to 7" in the channel head. The tube bundle is composed of 8519 square-bend tubes, which have an approximate OD of 0.75" and wall thickness of 0.048", and which are positioned in a 21" thick tube support plate. The top of the steam generator subassembly is closed by way of a steel "top hat" assembly, which is welded to the steam generator shell. The length of the steam generator subassembly package is approximately 41' 11-1/2". Nozzles and other penetrations are covered with welded closures. The steam generator subassembly is filled with low density concrete on both primary and secondary sides. The weight of the package is approximately 420 tons.

Figure 1 is a sketch of the package. Figure 2 is a representation of the package loaded onto the motor vehicle and on the barge.



-3-



NOTE: All Dimensions are Approximate and Not to Scale.

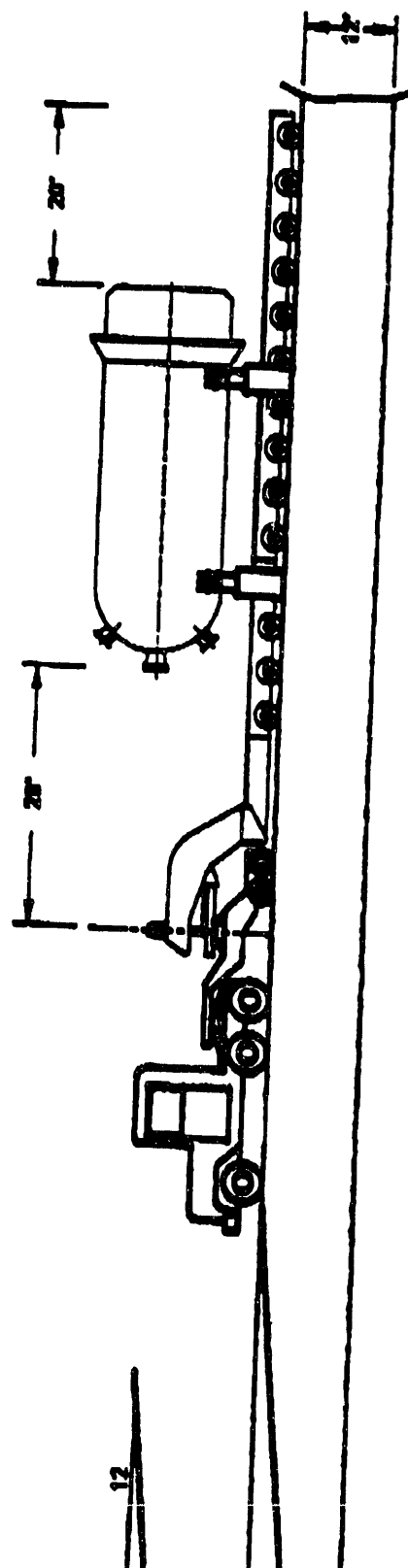


FIGURE 2. HILLSTONE UNIT 2 STEAM GENERATOR SUBASSEMBLY PACKAGE
LOADED ON MOTOR VEHICLE AND OCEAN-GOING BARGE

-4-

DRAWINGS

The package is constructed and assembled in accordance with the following Chem-Nuclear Systems, Inc. Drawing Nos:

C-110-B-43211-1, Rev. 1
C-110-A-43211-2, Rev. 1
C-110-D-43211-3, Rev. 1
C-110-B-43211-4, Rev. 2

CONTENTS

A. Type and form of material

Steam generator subassembly containing radioactive contamination, filled with low density concrete, meeting the requirements of low specific activity radioactive material.

B. Maximum quantity of material per package

Greater than a Type A quantity of radioactive material. Fissile material may be present provided the fissile material does not exceed the mass limits of 10 CFR §71.53.

STRUCTURAL EVALUATION

The steam generator subassembly package contains greater than a Type A quantity of low specific activity radioactive material. Consequently, the structural evaluation of the package design must demonstrate that the design meets the performance requirements of 10 CFR Part 71 for normal conditions of transport.

A. General Standards for all Packages

Minimum Package Size

The package meets the requirements of 10 CFR §71.43(a) for minimum size.

Tamper-proof Feature

The package requires no tamper-proof feature because the package top and the nozzle closure plates are welded to the vessel.

Positive Closure

The package cannot be inadvertently opened because the closures of the package are all welded shut.

Chemical and Galvanic Reactions

The materials used in the package will have no significant chemical, galvanic and other reactions.

Valves or Other Devices

There are no valves or other devices on the package.

B. Lifting and Tie-down Standards For all Packages

Lifting Devices

There are no mechanical or welded attachments to the package that can be used in lifting the package during transport. The top hat lugs are rendered inoperable for package lifting and tie-down.

Tie-Down Devices

The staff review did not include the equipment or the method used to support the package or to tie the package down to the trailer or to the barge. This is because there are no tie-down devices that are a structural part of the package, and the tie-down standards of 10 CFR Part 71 do not apply.

The applicant designed the package tie-down system to withstand the loads specified in ANSI N14.24. For the barge phase of the transport, stresses in the tie-down system will be limited to the allowable stress values specified in the AISC code. For the land transport phase, the allowable stresses in ANSI N14.24 will be used.

To ensure the adequacy of the support and tie-down system, and to ensure that the support and tie-down system receives the proper review, the Certificate of Compliance has been conditioned to specify that the system used to support and tie the package down be reviewed and certified by the National Cargo Bureau, Inc. The National Cargo Bureau is authorized in 49 CFR §176.18 to assist the Coast Guard in inspecting the stowage of hazardous materials and in certifying that the stowage of hazardous materials on vessels is in accordance with 49 CFR Subtitle B,

-6-

Chapter I, Subchapter C--Hazardous Materials Regulations. In addition, the Certificate of Compliance has been conditioned to specify that the shipment be inspected by the Coast Guard prior to transport to ensure proper stowage of the package on the barge.

C. Normal Conditions of Transport

Heat

There will be no significant pressure buildup or stress increase in the vessel under the normal transport heat condition.

Cold

The applicant performed a stress analysis of the package at -40 °F. The calculated stresses were well within allowable values.

The primary materials of construction of the containment vessel are SA508, Class 1 and 2, SA516 Grade 70, and SA533 Grade B, Class 1. These materials were evaluated for brittle fracture. The results showed that the materials meet the fracture toughness criteria of Regulatory Guide 7.11 for Category III containers. Regulatory Guide 7.11 provides fracture toughness criteria for Category I, II and III containers with shells up to 4" thick. The thickness of the steam generator shell is 4-3/8" along the side wall, 5-5/8" in the transition region, and 7" in the channel head. The NRC does not have fracture toughness criteria for Category III vessels greater than 4" thick. However, since the fabrication methods for the steam generator vessel were in accordance with ASME, Section III, Division I, for nuclear components, and exceed the criteria for 4"-thick Category III transportation packages, the staff agrees that the brittle fracture evaluation using the criteria of Regulatory Guide 7.11 is acceptable.

Reduced External Pressure and Increased External Pressure

The applicant evaluated the effects of an external pressure of 3.5 psia. Results of a finite element analysis using the ANSYS computer code, showed that the maximum stresses in the top hat were well below the allowable primary stresses.

To evaluate the effects of an increased external pressure of 20 psia, the vessel was conservatively evaluated for the more critical case of an increased external pressure of 21.67 psig (e.g., 50 feet water immersion). The evaluation showed that stresses in the vessel were well below the allowable stresses.

-7-

Shock and Vibration

There are no valves or other devices on the container that are susceptible to shock and vibration loads. Also, the containment vessel is filled with low density concrete to fix the contents in place. The tie-down system will be reviewed, approved, and certified by the National Cargo Bureau, Inc. as meeting the requirements of DOT regulations. There will be no significant adverse effects on the containment vessel, or its contents, from the shock and vibration loads normally incident to transport.

Water Spray

The container is of welded steel construction. Water spray will have no effect on the container.

Free Drop

Due to the very large size and weight of the package, and considering the special handling and operational controls, a one-foot free drop would not be a normal condition of transport. The package is loaded onto a wheeled vehicle, which is driven onto a barge at the applicant's site. Once loaded onto the vehicle, the package is not lifted until it is removed from the vehicle at the disposal site. The transport is primarily by barge, with only a short highway leg, much of which is on the DOE Savannah River Site. The applicant is taking special precautions to ensure the safe shipment of the packages. These special precautions are listed in Chapter 7 of the application and are summarized in Table 1.1 of the application. These precautions will be conditions of approval in the NRC Certificate of Compliance. In addition, the Certificate of Compliance specifies that the approval is limited to a one-time shipment of two separate packages. Although the applicant provided a structural analysis of the one-foot free drop, for the reasons stated above, the staff did not consider the analysis in its review.

Corner Drop

This test is not applicable because the weight of the package exceeds 200 pounds and neither wood nor fiber board is used as a material construction.

Compression

This test is not applicable because the weight of the package exceeds 11,000 pounds.

-8-

Penetration

A 13-pound steel cylinder dropped from a height of 40 inches would not penetrate the containment vessel.

D. Conclusion

The applicant has evaluated the package for the normal conditions tests specified in 10 CFR §71.71, excluding the one-foot free drop. In accordance with 10 CFR §71.41(c), the staff agrees that the controls proposed to be exercised by the shipper are adequate to assure the safety of the shipment, and that the one-foot free drop would not be a normal condition of transport for this package. The staff agrees with the applicant's conclusions that the package has sufficient structural integrity to meet the applicable performance criteria in 10 CFR Part 71.

THERMAL

The decay heat in the package is negligible.

CONTAINMENT

The containment vessel boundary is defined as the steam generator shell, the nozzle closures, and the top hat assembly. The containment vessel is welded closed. Void spaces within the vessel are filled with low density concrete. The containment vessel will remain intact under the normal conditions of transport as described above, and there will be no loss or dispersal of radioactive material.

EVALUATION OF RADIOACTIVE CONTENTS AND SHIELDING

The radioactivity present in the package is in the form of a tightly adherent contamination layer of activated corrosion products on the primary side surfaces of the steam generator subassembly (inside of the tubes and the primary channel head). The applicant estimated the radioactivity present in the package and the external dose rates based on radiation and contamination surveys performed while the steam generator was operational.

-9-

A. Radioactive Contents

In 1989, the applicant performed a series of radiation dose rate measurements on contact with the top of the steam generator tube bundle. The dose rates at this location ranged from 7 to 15 R/hr. Contamination surveys were also taken inside the channel head. The isotopic distribution was based on these contamination surveys.

The radioactivity present in the package was calculated using two computer codes, ISOTOPE Version 83.3 and QAD Version 79.0. ISOTOPE determined the gamma spectrum used as input in QAD, using seven energy groups. The gamma spectrum was based on an input of one curie. The QAD computer code was used to calculate the dose rate at the top of the tube bundle based on the ISOTOPE input. The curie content of the package was derived by normalizing the calculated dose rate to the maximum dose rate measured on the tube bundle (15 R/hr).

The total radioactivity was estimated at 1403 curies. The predominant gamma emitting nuclides were cobalt-60 (442 curies) and cobalt-58 (330 curies). Fissile materials were present in trace quantities, but were well below the fissile exempt quantities of 10 CFR §71.53. The staff agrees that the applicant's source term is conservative.

The staff performed a confirmatory analysis, using the applicant's values for the measured dose rate and the isotopic distribution, and using MICROSIELD, a point kernel computer code. The staff's results were consistent with the applicant's.

Using the calculated source terms, the applicant determined the concentration of radioactivity in the package. Considering only the weight of the low-density concrete, the concentration of radioactivity was approximately 0.036 mCi/g. The weight of the steam generator tubes, shroud, and shell was conservatively ignored in determining the concentration of radioactivity. The contents of the package meet the limits for low specific activity radioactive material defined in 10 CFR §71.4.

B. Shielding Calculation

The results of the contents analysis were used to estimate the external dose rates for the package. The components of the package included in the shielding analysis were the tubes, low density concrete (0.336 g/cm³), air, and outer steel wall. The tubes, air and low density concrete inside the shroud were homogenized and modeled at the

-10-

appropriate effective density. The concrete outside the shroud and the outer steel wall were modeled as concentric cylinders. No shielding credit was taken for the concrete inside the tubes.

The applicant used MICROSHIELD to calculate the dose rates at the package surface, at 2 meters from the package surface, and at 2 meters from the edge of the conveyance. The results showed that the dose rates at the package surface were within 10 CFR §71.47 limits, but the 2 meter dose rates were not. The applicant has conservatively estimated the external dose rates, and the measured dose rates are expected to be lower than the calculated values. However, the applicant will weld additional shielding on the surface of the package as necessary to comply with the radiation standards in 10 CFR §71.47.

The NRC staff performed an independent analysis, using MICROSHIELD, to confirm the applicant's results. The table below summarizes the results of the applicant's and staff's analyses.

<u>Location</u>	<u>EXTERNAL DOSE RATES (mrem/hr)</u>		<u>Allowable</u>
	<u>Applicant</u>	<u>NRC</u>	
Package surface			
Side	64.1	66.7	200
Top	94.2	114.6	200
Bottom	4.0	----	200
2 Meters from surface*			
Side	31.1	31.6	10
Top	11.4	10.7	10
Bottom	0.3	----	10
2 Meters from barge			
Side	11.5	11.5	10
Top	1.8	----	10
Bottom	0.04	----	10

* 2 meters from package surface for side dose rates, 2 meters from edge of trailer for top and bottom dose rates.

The applicant intends to add shielding, as necessary, to meet the radiation standards in 10 CFR §71.47. The need for shielding will be determined based on measurements taken prior to transport. The Certificate of Compliance has been conditioned to specify that shielding must be welded to the surface of the package, as necessary, to meet the external radiation standards of 10 CFR §71.47.

-11-

CRITICALITY

Trace amounts of fissile materials may be present. The Certificate of Compliance limits fissile materials to the exempt quantity defined in 10 CFR 571.53. Therefore criticality is not a concern.

FABRICATION EVALUATION

The Millstone Unit 2 steam generators were fabricated in accordance with the ASME Code, Section III, for nuclear components. These fabrication criteria are acceptable for a Category III transportation package. New welds will be made and inspected according to the ASME Code as specified on the packaging drawings referenced in the Certificate of Compliance.

OPERATING PROCEDURES, ACCEPTANCE TESTS AND MAINTENANCE PROGRAM

The two steam generator subassembly packages will be prepared for shipment from the Millstone Power Plant site for disposal near Barnwell, South Carolina. Each package will be shipped separately. Each package will be loaded onto a trailer designed for heavy loads, and the trailer will be driven onto an ocean-going barge. The barge will be transported along the east coast and into the Savannah River. The trailer will be off-loaded at the Department of Energy Savannah River site, and will travel a short distance on a public road before reaching the disposal site.

Chapter 8 of the application describes the acceptance tests which will be performed on the package prior to transport. These tests include: (1) radiation measurements which demonstrate that the radioactivity is not significantly different than the estimates in the application, and that the contents meet the concentration limits for low specific activity material, (2) visual inspection of the closure plates and welds, (3) external radiation measurements which show the package meets the standards in 10 CFR 571.47, and (4) contamination surveys which show the package meets the standards in 10 CFR 571.87.

Chapter 7 of the application describes the operational controls which will be used during transport of the packages.

-12-

Some of the operational controls during the barge phase are: (1) the use of a pre-planned route, (2) the use of an escort tug to accompany the primary tug, (3) a health physics technician present on the tug, (4) dual radar and dual navigational aids on the primary and escort tugs, (5) communication with the base station at least every four hours, (6) a maximum speed of transport of 10 knots.

Some of the operational controls during the trailer phase are: (1) a maximum transport speed of 5 mph, (2) escorts provided to control traffic near the trailer, (3) crossing roads blocked off while the trailer is passing through intersections.

Prior to transport, each shipment will receive a trip-in-tow inspection performed by a qualified marine surveyor. The Certificate of Compliance has been conditioned to specify that after the package is loaded onto the barge, the National Cargo Bureau, Inc. will inspect and certify that the system used to support and tie down the package to the barge and the stowage of the package are in accordance with the regulations of the Commandant, United States Coast Guard. In addition, the U.S. Coast Guard will be notified of the shipment and will inspect the condition of the vessel and the stowage of the package on the barge prior to transport.

CONDITIONS

1. In addition to the requirements of Subpart G of 10 CFR Part 71:
 - a. The package must be prepared for shipment and transported in accordance with Chapters 7 and 8 of the application.
 - b. The package must be transported in accordance with the operational controls of Table 1.1 of the application.
 - c. The top hat lugs are rendered inoperable for package lifting and tie-down.
 - d. Prior to transport, shielding must be welded onto the package in accordance with Chem-Nuclear Systems, Inc. Drawing No. C-110-B-43211-1, Rev. 1, as necessary, such that the package meets the external radiation standards of 10 CFR §71.47.
2. Prior to transport, the National Cargo Bureau, Inc. must have evaluated the system used to support and tie down the package on the barge, and must have certified that the support and tie-down system and the package stowage is in accordance with the regulations of the Commandant, United States Coast Guard.

-13-

3. Prior to transport, the United States Coast Guard must have inspected the condition of the vessel and the stowage of the package on the barge.
4. This certificate authorizes a one-time shipment for each of two packages from the Millstone Nuclear Power Plant site to a point near Barnwell, South Carolina.
5. The package authorized by this certificate must be transported on a motor vehicle and on a seagoing vessel assigned for sole use of the licensee.
6. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR §71.12.
7. Expiration date: May 31, 1997.

CONCLUSIONS

Based on the review of the statements and representations contained in the application, as supplemented, and the conditions listed above, we have concluded that the Millstone Unit 2 Steam Generator Subassembly package meets the requirements of 10 CFR Part 71.



Charles E. MacDonald, Chief
Transportation Branch
Division of Safeguards and
Transportation, NMSS

Date JUN 11 1992

APPENDIX C: COE Nationwide Permit



DEPARTMENT OF THE ARMY
CHARLESTON DISTRICT CORPS OF ENGINEERS
P O BOX 818
CHARLESTON, S C 29402 0818

REPLY TO
ATTENTION OF

August 13, 1992

Regulatory Branch

Lockwood Brothers, Inc.
Attn: Mr. Robert Phillips
220 Salters Creek Road
Hampton, Virginia 23669

Dear Mr. Phillips:

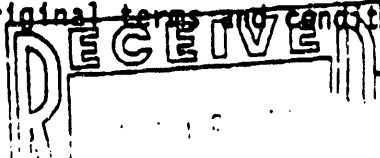
This is in response to your letter dated August 7, 1992, wherein you requested permission to repair, rehabilitate, or replace a currently serviceable boat ramp at mile post #157 on the Savannah River in Barnwell County, South Carolina.

This is to inform you that the proposed work is authorized by a nationwide permit since it is considered to be the repair, rehabilitation, or replacement of a previously authorized, currently serviceable structure. This work is authorized provided such repair is not put to uses differing for those specified for it in any permit or modification authorizing its original construction. Authorization of this work is subject to the attached special conditions and the limitations specified herein.

In addition, you indicated that some minor dredging may be necessary to accomplish the planned work. Such minor dredging is authorized by Nationwide Permit #19 given at 33 CFR Appendix A, provided the dredging is limited to no more than 25 cubic yards and will not involve dredging of submerged aquatic vegetation, anadromous fish spawning areas, or wetlands. If the work requires dredging of more than 25 cubic yards or involves dredging of submerged aquatic vegetation, anadromous fish spawning areas, or wetlands, then an Individual Department of the Army permit will be required.

In future correspondence concerning this matter, please refer to SAC-03-92-655-X. You may still need State or local assent. Prior to performing any work, you should contact the South Carolina Water Resources Commission. A copy of this letter is being forwarded to them and the Environmental Protection Agency for their information. The addresses for these agencies are provided on the enclosed list for your convenience.

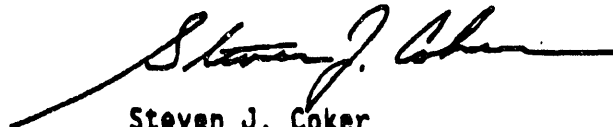
This authorization is valid until January 21, 1997. The time specified for this authorization will remain valid if the nationwide permit is reissued without modification, or the activity complies with any subsequent modification; however, the provisions of 33 CFR 330.6(b) will apply if the nationwide permit expires, is suspended or revoked, or is modified such that the activity no longer complies with the original terms and conditions. In



general these provisions provide that if the work authorized by this letter has commenced in accordance with the requisite terms and conditions or you, acting in reliance of this nationwide permit, have entered into a contract to have the work performed prior to such date, this authorization will remain in effect if the work can be completed within twelve months of the date of the nationwide permit expiration, modification or revocation unless discretionary authority has been exercised in accordance with 33 CFR 330.4(c) or (d).

If you have any questions concerning this matter, please contact me at A/C 803-727-4330.

Sincerely,



Steven J. Coker
Project Manager

Enclosures

Copy Furnished:

Mr. Joe Dennis
South Carolina Water Resources Commission
1201 Main Street, Suite 1100
Columbia, South Carolina 29201

U. S. Environmental Protection Agency
Region IV, Wetlands Regulatory Unit
345 Courtland Street
Atlanta, Georgia 30365

**U.S. DEPARTMENT OF ENERGY
FINDING OF NO SIGNIFICANT IMPACT
DOE PERMISSION FOR OFF-LOADING ACTIVITIES TO SUPPORT
THE MOVEMENT OF MILLSTONE UNIT 2 STEAM GENERATOR SUB-ASSEMBLIES
ACROSS THE SAVANNAH RIVER SITE, AIKEN, SC**

AGENCY: Department of Energy

ACTION: Finding of No Significant Impact

SUMMARY: The Department of Energy (DOE) has prepared an Environmental Assessment (EA), DOE/EA-0818, for the proposed granting of DOE permission of offloading activities to support the movement of Millstone Unit 2 steam generator sub-assemblies (SGSAs) across the Savannah River Site (SRS). Based on the analyses in the EA, DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA) of 1969. Therefore, an environmental impact statement is not required, and the Department is issuing this Finding of No Significant Impact (FONSI).

On the basis of the floodplain/wetlands assessment in the EA, DOE has determined that there is no practicable alternative to the proposed activities and that the proposed action has been designed to minimize potential harm to or within the floodplain of the SRS boat ramp. No wetlands on SRS would be affected by the proposed action.

MASTER

ds
DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

PUBLIC AVAILABILITY:

Copies of the EA and FONSI are available from:

Mr. Karl E. Goodwin
U. S. Department of Energy
Office of Processing and Reactor Facilities
1000 Independence Avenue, S.W.
Washington, DC 20545
Phone: (301) 903-5498

For further information on the NEPA process, contact:

Ms. Carol Borgstrom
U. S. Department of Energy
Office of NEPA Oversight
1000 Independence Avenue, S.W.
Washington, DC 20545
Phone: (202) 586-4600 or (800) 472-2756.

BACKGROUND: The Millstone Unit 2 in Waterford, Connecticut, is retiring its two steam generators. As approved by the Nuclear Regulatory Commission (NRC), the two decommissioned SGSAs would be seal-welded, filled with concrete, and moved to the CNSI facility located in Barnwell County, South Carolina for disposal as low-level radioactive waste. Each SGSA package would consist of a steam generator vessel, top hat, tubes, tube supports and concrete, and would have a total radioactivity calculated at 1403 curies. The major radionuclides are Cobalt-60/58, Iron-55, and Nickel-63. Each SGSA package would be loaded on a trailer and then on to a barge in Connecticut and moved to CNSI separately. The loaded truck-trailer combination would be 116 feet long, 18 feet wide, 20 feet high, and weigh 1,150,350 pounds. The loaded barge would be approximately 200 feet long and 40 feet wide, draw 4 feet of water, and be pushed by two tugboats.

PROPOSED ACTION: The proposed action is for DOE to grant permission to Chem-Nuclear Systems Incorporated (CNSI) to modify and use the SRS boat ramp at river mile 157 on the Savannah River to facilitate offloading and movement of two SGSAs over SRS roads for their disposal at the CNSI low-level radioactive waste burial facility. Two separate trips would be necessary.

Federal permission to use the SRS boat ramp is necessary to enable CNSI to ship the two SGSAs via waterborne traffic, the safest and most economical means of movement for these huge packages. Once offloaded, the SGSAs would be moved across SRS using CNSI equipment to the CNSI facility. The proposed action has no connection to SRS operations and is in no way necessary to support SRS activities.

ALTERNATIVES: In addition to the proposed action, DOE considered the no action alternative of refusing permission for the offloading activities and movement of the SGSAs over SRS roads.

Alternatives available to CNSI should DOE choose the no action alternative were: use of other docking facilities, overland rail movement, and overland road movement. These alternatives were not considered reasonable because there are no other docks on the South Carolina side of the Savannah River that could accommodate oversize/overweight loads of this magnitude, nor are there any Savannah River bridges that could handle the weight should docks on the Georgia side be considered. The alternatives of overland rail or road movement of the SGSAs were not selected because railroad and highway bridges could not sustain the weight.

ENVIRONMENTAL IMPACTS: The potential environmental impacts of DOE permitting the CNSI offloading activities to support the movement of the SGSAs across SRS were determined to be temporary and insignificant.

The modification activities at the SRS boat ramp would be minor and have been reviewed and authorized by the U.S. Army Corps of Engineers (COE) under Nationwide Permit #3. Modifications to the existing 15-foot wide SRS boat ramp would be to remove upland vegetative growth and silt that has accumulated on and adjacent to the ramp to provide a 40-foot wide access to the ramp area for the barge to dock and offload the SGSAs. The silt, soil, and vegetative growth would be disposed at an approved landfill on SRS. CNSI estimates approximately 17 cubic yards of sediment would be dredged 20 feet on either side of the centerline of the SRS boat ramp. To maintain compliance with the COE nationwide permit, CNSI would not remove more than 25 cubic yards of material from below the Savannah River ordinary high water mark.

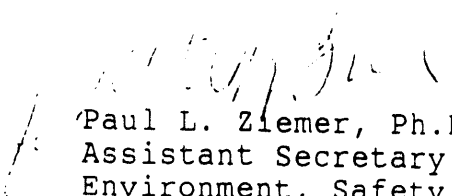
During the time between the two proposed SGSA trips, the area around the SRS boat ramp would be protected from the effects of erosion by the use of erosion mats. At the termination of the project, CNSI would restore the affected floodplain contours above the ordinary high water mark to pre-project conditions. Adherence to a DOE-approved soil erosion control plan by CNSI would be required before the proposed work is initiated. No wetlands on the SRS would be affected by this project.

In accordance with DOE regulations for compliance with floodplain/wetlands environmental review requirements (10 CFR Part 1022), DOE prepared an assessment for the area surrounding the SRS boat ramp. This assessment showed that the floodplain/wetlands within the immediate area would not be affected by the offloading activities, providing appropriate erosion control measures were implemented.

All environmental and safety risks have been determined to be minimal, as well as the potential for an accident during the offloading of the barge. Two SRS bridges would be temporarily modified to accommodate movement of the SGSAs across the site. All modifications would be done above the bridges; therefore, there would be no wetlands impacted.

DETERMINATION: The proposed granting of DOE permission to CNSI to modify and use the SRS boat ramp on the Savannah River to facilitate offloading and movement of SGSAs across SRS does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of NEPA. Therefore, an environmental impact statement is not required.

Issued at Washington, D.C., this 24 day of April 1992.


Paul L. Ziemer, Ph.D.
Assistant Secretary
Environment, Safety and Health

END

**DATE
FILMED**

11 / 12 / 93

